AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1-11. (canceled).

12. (new): A device for detecting a road traveling lane, comprising:

image pickup means that continuously picks up images on a road surface;

edge point detection section for detecting a plurality of edge points in a contour on the image;

segment group producing section for providing a line segment for the plurality of edge points detected by said edge point detection section, on the basis of continuity of distance and direction between neighboring edge points, and grouping a plurality of line segments having a predetermined relationship with each other, to produce a segment group;

curve detection section for detecting a curve fitted to the segment group produced by said segment group producing section; and

lane boundary position defining section for comparing a plurality of curves distributed in the vicinity of right and left lane boundaries out of the curves detected by said curve detection section, with the segment groups produced by said segment group producing section, to define an innermost marking line, when a segment group forming a curve closest to the center of said traveling lane has a predetermined length and repeated cycle, and define a position of a neighboring curve outside of said innermost marking line relatively to the center of said traveling lane, as a position of a boundary of said traveling lane.

13. (new): A device for detecting a road traveling lane as described in claim 12, wherein said segment group producing section produces said segment group for a group including a predetermined line segment and another line segment provided in an area of the predetermined distance and direction relative to the predetermined line segments in said plurality of line segment.

14. (new): A device for detecting a road traveling lane as described in claim 12, wherein said segment group producing section provides said line segment for a group of edge points including the plurality of edge points detected by said edge point detection section, on the basis of continuity of distance and direction between neighboring edge points.

15. (new): A device for detecting a road traveling lane as described in claim 12, wherein said segment group producing section determines that there is a predetermined relationship, to be processed as one group, when there is another line segment in an area of the predetermined distance and direction relative to a predetermined line segment, in a group of line segments based on said plurality of line segments.

16. (new): A device for detecting a road traveling lane as described in claim 12, wherein said curve detection section applies a curve-fitting to the grouped line segments, to detect said curve.

17. (new): A device for detecting a road traveling lane as described in claim 12, wherein said lane boundary position defining section determines if said line segments have a predetermined length and cycle in a longitudinal direction or a lateral direction to provide a block-like marking line, and removes said block-like marking line from a lane boundary to be, when said lane boundary position defining section determines affirmatively, and wherein said lane boundary position defining section determines that the curve provided outside of said block-like marking line relatively to the center of said traveling lane is said boundary of said traveling lane.

18. (new): A device for detecting a road traveling lane as described in claim 12, wherein said edge point detection section detects the plurality of edge points on the image picked up by said image pickup means, and makes a reverse projection of coordinate data of the plurality of edge points on a 3-dimensional road surface coordinate, to provide said plurality of edge points.

19. (new): A device for detecting a road traveling lane, comprising:

image pickup means that continuously picks up images on a road surface;

edge point detection section for detecting a plurality of edge points from a contour on the images;

curve detection section for detecting curves fitted to the plurality of edge points detected by said edge point detection section;

segment group producing section for grouping groups of edge points contributed to the curves detected by said curve detection section, to produce segment groups; and

lane boundary position defining section for comparing a plurality of curves distributed in the vicinity of right and left lane boundaries out of the curves detected by said curve detection section, with the segment groups produced by said segment group producing section, to define an innermost marking line, when a segment group produced for a curve closest to a center of said traveling lane indicates a predetermined length and repeated cycle, and define a position of a neighboring curve outside of said innermost marking line relatively to the center of said traveling lane, as a position of a boundary of said traveling lane.

20. (new): A device for detecting a road traveling lane as described in claim 19, wherein said segment group producing section provides an edge histogram for the groups of edge points provided for the curves detected by said curve detection section, and groups the groups of edge points contributed to peaks of said histogram, to produce segment groups.

21. (new): A device for detecting a road traveling lane as described in claim 20, wherein said lane boundary position defining section determines if the peaks of said histogram have a predetermined length and cycle in a longitudinal direction or a lateral direction to provide a block-like marking line, and removes said block-like marking line from a lane boundary to be, when said lane boundary position defining section determines affirmatively, and wherein said lane boundary position defining section determines that the curve provided outside of said block-like marking line relatively to the center of said traveling lane is said boundary of said traveling lane.

22. (new): A device for detecting a road traveling lane as described in claim 19, wherein said edge point detection section detects the plurality of edge points on the image picked up by said image pickup means, and makes a reverse projection of coordinate data of the plurality of edge points on a 3-dimensional road surface coordinate, to provide said plurality of edge points.